

WHAT IS CLAIMED IS:

1. A method of producing an oxide superconducting wire, said method comprising the steps of:

forming a precursor of oxide superconductor into a rod;

forming a ceramic layer on the surface of said rod to produce a ceramic-coated rod;

inserting a plurality of said ceramic-coated rods into a metal pipe to produce a multifilament billet;

subjecting said multifilament billet to plastic deformation to form a multifilament wire;

subjecting said multifilament wire to a heat treatment to produce oxide superconductors.

2. A method of producing an oxide superconducting wire, said method comprising the steps of:

forming a ceramic powder into a ceramic pipe;

filling a precursor of oxide superconductor in said ceramic pipe to produce a ceramic-coated rod;

inserting a plurality of said ceramic-coated rods into a metal pipe to produce a multifilament billet;

subjecting said multifilament billet to plastic deformation to produce a multifilament wire;

subjecting said multifilament wire to a heat treatment to produce oxide superconductors.

3. A method of producing an oxide superconducting wire, said method comprising the steps of:

forming a ceramic powder into a ceramic billet having a plurality of holes extending in a longitudinal direction;

filling a precursor of oxide superconductor into said holes to produce a ceramic-coated rod;

inserting a plurality of said ceramic-coated rods into a metal pipe to produce a multifilament billet;

subjecting said multifilament billet to plastic deformation to produce a multifilament wire;

subjecting said multifilament wire to a heat treatment to produce oxide superconductors.

4. A method of producing an oxide superconducting wire, said method comprising the steps of:

forming a precursor of oxide superconductor in silver-based sheath to produce a coated rod;

forming a ceramic layer on the surface of said coated rod by extrusion to produce a ceramic-coated rod;

inserting a plurality of said ceramic-coated rods into a metal pipe to produce a multifilament billet;

subjecting said multifilament billet to plastic deformation to produce a multifilament wire;

subjecting said multifilament wire to a heat treatment to produce oxide superconductors.

5. A method of producing an oxide superconducting wire as defined in one of claims from 1, wherein said precursor of said oxide superconductors contains a part of the composition of said oxide superconductors, while said ceramic powder contains the remaining composition of said oxide superconductors.

6. A method of producing an oxide superconducting wire as defined in one of claims 1, said method further comprising a step of twisting said multifilament wire prior to said heat treatment.

7. A method of producing an oxide superconducting wire as defined in one of claims 1, wherein the powder of said ceramic layer contains an oxide of at least one kind selected from the group consisting of bismuth, lead, strontium, calcium, barium, titanium, niobium, molybdenum, tantalum, tungsten, vanadium, zirconium, copper and silver.

8. A method of producing an oxide superconducting wire as defined in one of claims 1, wherein said oxide superconductors are bismuth-based superconductors.

9. A method of producing an oxide superconducting wire as defined in claim 7, wherein said powder of ceramic layer contains an oxide including an alkali earth metal and copper.

10. A method of producing an oxide superconducting wire as defined in one of claims 1, wherein said metal pipe contains at least one kind selected from the group consisting of silver, copper, manganese, magnesium, antimony, iron, chromium, and nickel.

11. A method of producing an oxide superconducting wire as defined in claim 1, wherein said ceramic layer formed by an extrusion process.

12. A method of producing an oxide superconducting wire as defined in claim 2, wherein said ceramic pipe is formed by an extrusion process.

13. A method of producing an oxide superconducting wire as defined in claim 3, wherein said ceramic billet is formed by an extrusion process.

14. A method of producing an oxide superconducting wire as defined in claim 2, wherein said precursor of said oxide superconductors contains a part of the composition of said oxide superconductors, while said ceramic powder contains the remaining composition of said oxide superconductors.

15. A method of producing an oxide superconducting wire as defined in claim 3, wherein said precursor of said oxide superconductors contains a part of the composition of said oxide superconductors, while said ceramic powder contains the remaining composition of said oxide superconductors.

16. A method of producing an oxide superconducting wire as defined in claim 2, said method further comprising a step of twisting said multifilament wire prior to said heat treatment.

17. A method of producing an oxide superconducting wire as defined in claim 3, said method further comprising a step of twisting said multifilament wire prior to said heat treatment.

18. A method of producing an oxide superconducting wire as defined in claim 4, said method further comprising a step of twisting said multifilament wire prior to said heat treatment.

19. A method of producing an oxide superconducting wire as defined in claim 2, wherein the powder of said ceramic layer contains an oxide of at least one kind selected from the group consisting of bismuth, lead, strontium, calcium, barium, titanium, niobium, molybdenum, tantalum, tungsten, vanadium, zirconium, copper and silver.

20. A method of producing an oxide superconducting wire as defined in claim 3, wherein the powder of said ceramic layer contains an oxide of at least one kind selected from the group consisting of bismuth, lead, strontium, calcium, barium, titanium, niobium, molybdenum, tantalum, tungsten, vanadium, zirconium, copper and silver.

21. A method of producing an oxide superconducting wire as defined in claim 4, wherein the powder of said ceramic layer contains an oxide of at least one kind selected from the group consisting of bismuth, lead, strontium, calcium, barium, titanium,

niobium, molybdenum, tantalum, tungsten, vanadium, zirconium, copper and silver.

22. A method of producing an oxide superconducting wire as defined in claim 2, wherein said oxide superconductors are bismuth-based superconductors.

23. A method of producing an oxide superconducting wire as defined in claim 3, wherein said oxide superconductors are bismuth-based superconductors.

24. A method of producing an oxide superconducting wire as defined in claim 4, wherein said oxide superconductors are bismuth-based superconductors.

25. A method of producing an oxide superconducting wire as defined in claim 2, wherein said metal pipe contains at least one kind selected from the group consisting of silver, copper, manganese, magnesium, antimony, iron, chromium, and nickel.

26. A method of producing an oxide superconducting wire as defined in claim 3, wherein said metal pipe contains at least one

kind selected from the group consisting of silver, copper, manganese, magnesium, antimony, iron, chromium, and nickel.

27. A method of producing an oxide superconducting wire as defined in claim 4, wherein said metal pipe contains at least one kind selected from the group consisting of silver, copper, manganese, magnesium, antimony, iron, chromium, and nickel.